

REMARKS

Claims 1-11 and 15-17 are allowed, and claims 12-14 are rejected.

Review and reconsideration on the merits are requested.

Claims 12-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,819,602 to Mieno et al in view of U.S. Patent 5,709,198 to Sagisaka et al.

Mieno et al was cited as disclosing a vehicle control system comprising an oxygen sensor substantially meeting the terms of the rejected claims, including storage means relating to the claimed first and second signals and anomaly judgment means for determining a type and/or location of an anomaly of a sensor, based on levels of measurement signals in a stored relationship (citing Figs. 4a and 4b which relate to monitoring of V_S and I_P and Fig. 3 as to the claimed storage means). The Examiner relied on Sagisaka et al as disclosing that additional anomalies can be determined based on a signal corresponding to the resistance of the sensor. The reason for rejection was that it would have been obvious to utilize the additional anomaly detection of Sagisaka et al for the vehicle control system of Mieno et al in order to detect additional anomalies that might interfere with sensor feedback control.

Applicants traverse, and respectfully request the Examiner to reconsider in view of the amendment to claims and the following remarks.

Claim 12 has been amended to recite that the vehicle control system comprises anomaly judgment means for specifying a type and/or location of an anomaly in the wiring lines, based on comparing levels of at least said three measurement signals (a first signal corresponding to a magnitude of current flowing through the oxygen pump cell, a second signal correspond to an

electric potential of the oxygen-partial-pressure detection cell, and a third signal corresponding to a resistance of the oxygen-partial-pressure detection cell) and the stored relationship, when the air fuel ratio of an engine is controlled to a fuel-lean region and the second signal corresponding to the electric potential of the oxygen-partial-pressure detection cell is equal to or lower than a predetermined voltage. Detection of an anomaly in wiring lines 41, 42, 43 based on comparing levels of at least measurement signals 81a, 81b, 81c and the stored relationship is described at paragraphs [32] and [33] of the specification (twelfth aspect of the invention).

Claim 14 has been amended to conform to the amendment to claim 12. Claim 13 has been canceled.

The invention of claim 12 provides a synergistic effect, attained by comparing levels of the three signals under a certain condition, namely, under the fuel-lean side with a predetermined electric potential of the detection cell. More particularly, the invention of claim 12 enables detection of a line or terminal connected thereto which shows an anomaly. For example, a line for COM (see Fig. 3 of the present specification) can now be identified in accordance with the vehicle control system of claim 12 and located as broken, by comparing levels of V_s , V_{I_p} and $V_{r_{pvs}}$.

The combination of Mieno et al and Sagisaka et al would only lead to the possibility of an ANOMALY as shown in Fig. 3, which does not inform or specify the type of anomaly and where it occurs. Mieno et al teaches detection of an anomaly of the sensor based on two signals (for I_p and V_s). Sagisaka et al teaches determining a temperature abnormality of the sensor element based upon a signal of the element resistance ($V_{r_{pvs}}$).

That is, the combination of Mieno et al and Sagisaka et al would only lead to indication that an ANOMALY has occurred as shown in Fig. 3, because the levels of the three signals are not taken into consideration.

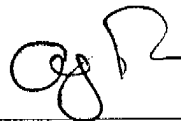
For the above reasons, it is submitted that the amended claims are patentable over Mieno et al in view of Sagisaka et al, and withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Withdrawal of all rejections and allowance of claims 1-17 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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23373

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Date: February 14, 2008